TETRANEURIS LINEARIFOLIA VAR. *ARENICOLA* (ASTERACEAE: HELIANTHEAE): A NEW VARIETY FROM SOUTH TEXAS

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ABSTRACT

Tetraneuris linearifolia var. *arenicola* var. nov. is described from South Texas, where it is endemic and restricted to habitats of sandy soil. Morphologic, cytologic, and chemical data are all consistent with its recognition as a variety of *T. linearifolia*.

RESUMEN

Se describe una nueva variedad endémica, *Tetraneuris linearifolia* var. *arenicola*, del sur de Tejas, restringida a los habitatas de sustrato arena. Datos morfológicos, citológicos y químicos son consistentes con reconocimiento de este taxón como una variedad de *T. linearifolia*.

INTRODUCTION

For several years the senior author has collected plants of the genus *Tetraneuris* E. Greene growing in deep sand in the vicinity of Brooks County in South Texas (Fig.1). It appeared that these plants were closely related to but distinct from plants classified as *Tetraneuris linearifolia*; however, caution was warranted until type studies could be done because *T. linearifolia* is morphologically very variable and several variants had already been described as species or varieties. Now that we have completed our type, morphologic, cytologic, and chemical studies, we are confident that this entity has not been described previously and that it should be recognized as a variety of *T. linearifolia*.

MATERIALS AND METHODS

For type studies, specimens were borrowed from BM, F, GH, K, MICH, MO, NDG, PH, RM, NY, UC, and US.

For morphologic studies, representative specimens from throughout the range of *Tetraneuris linearifolia* var. *arenicola* and var. *linearifolia* (Fig. 1) were examined

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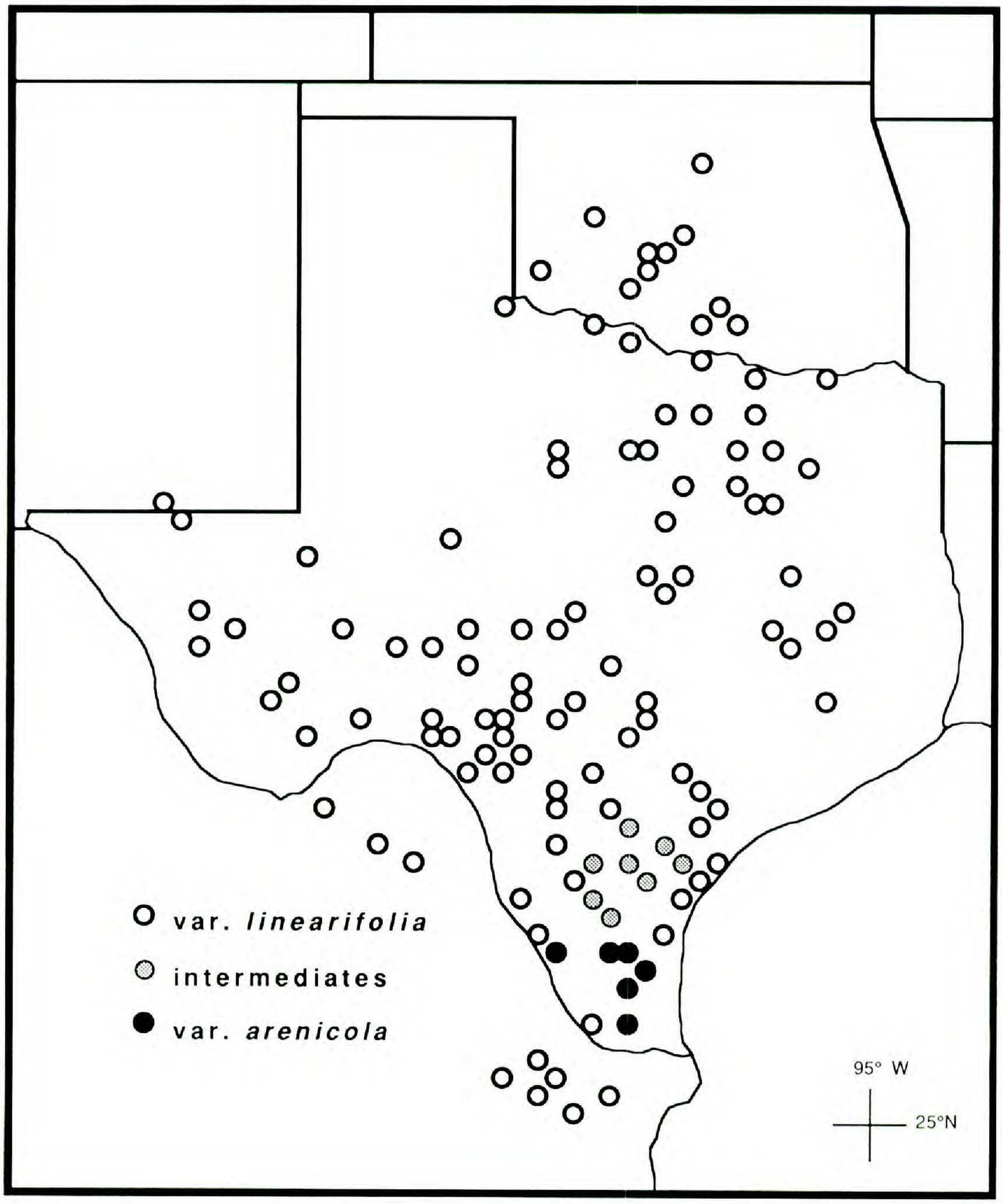

FIG. 1. Distribution of *Tetraneuris linearifolia* var. *linearifolia*, *T. linearifolia* var. *arenicola* and intermediates.

for descriptive purposes and for counts and measurements dealing with plant height, stem number, midstem leaf width, peduncle length, head number, height and diameter, and receptacle height and diameter. For counts and measurements dealing with outer and inner involucral bract number, length and width, ligule number, length and width, disc corolla length and diameter, disc corolla tube length, achene length and diameter, pappus scale number, length and width, and pappus scale awn length (when appropriate), ten specimens (from ten different populations of *T. linearifolia* var. *linearifolia* and from a total of four populations

of *T. linearifolia* var. *arenicola*) from throughout the range of each taxon were selected, and one flowering head was removed from each for examination. The heads were dissected after they had soaked in detergent water, and all parts except for the ligules were allowed to dry before any measurements were made. From each head, all of the involucral bracts and ligules were counted and measured, ten disc corollas were selected for measurements, ten achenes were selected for measurements and for pappus scale counts, and one pappus scale from each achene was selected for measurements. Counts and measurements are presented in the description as the mean plus or minus one standard deviation followed by the range (given as minimum to maximum) and sample size (n). Characters from the different taxa were compared using the unpaired, two-tail t-test (Table 1). Because we ran separate t-tests on multiple characters, we do not consider a difference to be statistically significant unless $p \leq 0.01$. All statistical work was done with StatView™ 512+ (Abacus Concepts, 1986) on a Macintosh II computer.

For cytologic studies, bud material was fixed in a modified Carnoy's solution: chloroform, absolute ethanol, and glacial acetic acid (4:3:1; V:V:V). Chromosomes were stained with acetocarmine, and counts were obtained from microsporocytes at diakinesis or metaphase I. Voucher specimens are deposited at SWT and TEX.

For chemical studies, we used 2 kg of aerial parts of *T. linearifolia* var. *arenicola* (*Bierner 88-35*, see list of specimens examined). Details of extraction, isolation, and identification are presented elsewhere (Díaz et al. 1992).

RESULTS AND DISCUSSION

In agreement with Parker (1980) and Robinson (1981), we are recognizing *Tetraneuris* E. Greene as a genus distinct from *Hymenoxys* Cass. Morphologically, both genera have two series of involucral bracts, but the outer and inner bracts are similar to one another and free in *Tetraneuris*, while the two series are dissimilar and the outer ones are united in *Hymenoxys*. In addition, all of the taxa placed in *Hymenoxys* sensu stricto have leafy stems and most have dissected leaves, while only four of 13 taxa in *Tetraneuris* have leafy stems, and none have dissected leaves. With regard to chemistry, taxa referable to *Hymenoxys* have a tendency to produce secohelenanolides in addition to other types of sesquiterpene lactones, while taxa referable to *Tetraneuris* have not yet been found to produce secohelenanolides (Seaman 1982). Conversely, acylated monoterpene glycopyranosides isolated from taxa referable to *Tetraneuris* (Gao et al. 1991; Zdero et al. 1991; Díaz et al. 1992) have not yet been isolated from taxa in *Hymenoxys*.

We examined all original descriptions and type specimens referable to *Tetraneuris*, and none of them matched the South Texas plants treated here as *Tetraneuris linearifolia* var. *arenicola*. Furthermore, it is our opinion that the names *Hymenoxys linearifolia* Hook. var. *linearifolia*, *Actinea ursina* Standley, *Actinella*

linearifolia (Hook.) Torrey & A. Gray var. *caule-elatiore* A. Gray, *Tetraneuris oblongifolia* E. Greene, *Tetraneuris linearifolia* (Hook.) E. Greene var. *latior* Cockerell, and *Tetraneuris linearifolia* (Hook.) E. Greene subsp. *dodgei* Cockerell should be treated as taxonomically synonymous.

Tetraneuris linearifolia var. *arenicola* differs from var. *linearifolia* in many of its characters (Table 1). Most notably, the two varieties differ with regard to the number of stems originating from the base of the plant, degree of stem and leaf pubescence, degree of leaf margin dentition, receptacle shape, degree of inner bract pubescence, and soil preference, and they are statistically significantly different from one another in plant height, midstem leaf width, peduncle length, head height and diameter, receptacle height and diameter, outer bract number, length and width, inner bract length and width, ray floret number, ligule length, disc corolla length and diameter, disc corolla tube length, achene length, pappus scale number and length, and pappus awn length (var. *arenicola* lacks awns). Of these, the most useful characters for diagnostic purposes are stem and leaf pubescence, leaf margin dentition, midstem leaf width, peduncle length, outer bract number, pappus scale number, presence or absence of the pappus awn, and soil preference.

Conversely, var. *arenicola* and var. *linearifolia* are very similar or identical with regard to habit, stem branching pattern, pattern of leaf attachment, number of heads per plant, head shape, involucral bract shape (both outer and inner), outer bract pubescence, inner bract number, ligule pubescence and width, disc corolla pubescence, achene characters other than length, and pappus scale shape and width (Table 1). Of particular note, they are the only two annual taxa in *Tetraneuris*, and only three other taxa in *Tetraneuris* have leafy stems. In addition, we have collected and seen herbarium sheets of difficult-to-classify plants from Duval, McMullen, Live Oak, and Bee counties (Fig. 1; Table 2). These plants tend to have stem and leaf pubescence similar to that of var. *arenicola*, midstem leaf width and leaf margin dentition that are intermediate, and awned pappus scales similar to those of var. *linearifolia*. Like var. *arenicola*, they tend to grow in sandy soil, but they have also been collected on limestone-derived soil, the preferred substrate of var. *linearifolia*.

Tetraneuris linearifolia var. *linearifolia* has been reported to have chromosome numbers of $n = 14$ (Turner & Flyr 1966; Urbatsch 1974; Strother 1983), $n = 15$ (Speese & Baldwin 1952; Powell & Turner 1963; Strother 1966), and $n = 15 + 1_b$ (Harms 1969). This taxon may indeed be dibasic, but it is notable that one herbarium sheet at TEX (Mexico, Nuevo Leon, *Turner & Powell 1066*) is annotated as "$n = 14_{II}$ (possibly 13_{II} + a ring of 4)". It is possible that a reciprocal translocation is present in some populations, and plants that are actually $2n = 13_{II} + 1_{IV}$ have been mistaken for $2n = 14_{II}$. *Tetraneuris linearifolia* var. *arenicola* is here reported to have $2n = 15_{II}$ (*Bierner 88-35* and *Bierner 91-12*, see list of specimens examined). In addition, some of the difficult-to-classify plants mentioned in the

TABLE 1. Morphologic comparison of *Tetraneuris linearifolia* var. *linearifolia* and *T. linearifolia* var. *arenicola*. For characters compared by *t*-test, the unpaired *t* value (*t*) and two-tail probability (*p*) are shown following the character. Counts and measurements are presented as the mean plus or minus one standard deviation followed by the sample size (*n*).

Character	*T. l.* var. *linearifolia*	*T. l.* var. *arenicola*
Habit	annual	annual
Plant height ($t=3.96$; $p=0.0002$)	2.6 ±0.6 dm ($n=38$)	3.4 ±0.7 dm ($n=12$)
Number of stems from the base	usually 1, sometimes 2 – 6	sometimes 1, usually 4 – 10
Stem branching pattern	corymbose	unbranched to corymbose
Stem pubescence	sparse to dense	dense
Stems leafy	yes	yes
Leaf pubescence	sparse to moderate	moderate to usually dense
Leaf margins (basal and lower leaves)	usually entire	usually 2 – 6-toothed or -lobed
Leaf margins (middle and upper leaves)	usually entire	often 1 – 2-toothed or -lobed
Midstem leaf width ($t=9.46$; $p=0.0001$)	2.2 ±0.8 mm ($n=38$)	6.7 ±2.8 mm ($n=36$)
Peduncle apex pubescence	usually dense	very dense
Peduncle length ($t=6.99$; $p=0.0001$)	11.8 ±2.6 cm ($n=38$)	17.8 ±4.6 cm ($n=36$)
Head number ($t=-0.86$; $p=0.39$)	29 ±19 per plant ($n=38$)	23 ±16 per plant ($n=12$)
Head shape	hemispheric	hemispheric
Head height ($t=8.73$; $p=0.0001$)	6.9 ±0.9 mm ($n=38$)	9.0 ±1.0 mm ($n=27$)
Head diameter ($t=11.17$; $p=0.0001$)	9.5 ±1.5 mm ($n=38$)	13.4 ±1.2 mm ($n=27$)
Receptacle shape	usually conic	hemispheric to occasionally conic
Receptacle height ($t=3.23$; $p=0.002$)	2.5 ±0.7 mm ($n=38$)	3.1 ±0.6 mm ($n=26$)
Receptacle diameter ($t=7.18$; $p=0.0001$)	2.9 ±0.8 mm ($n=38$)	4.4 ±0.9 mm ($n=26$)
Outer bract number ($t=5.06$; $p=0.0001$)	10 ±2 per head ($n=10$)	17 ±3 per head ($n=10$)
Outer bract shape	obovate to oblanceolate	usually oblanceolate
Outer bract outer surface pubescence	moderate to dense	dense
Outer bract length ($t=11.81$; $p=0.0001$)	3.7 ± 0.5 mm ($n=104$)	4.4 ±0.5 mm ($n=165$)
Outer bract width ($t=-0.960$; $p=0.0001$)	1.1 ±0.2 mm ($n=104$)	0.9 ±0.2 mm ($n=165$)
Inner bract number ($t=2.22$; $p=0.0393$)	17 ±6 ($n=10$)	22 ±4 ($n=10$)
Inner bract shape	obovate	obovate
Inner bract outer surface pubescence	moderate	dense
Inner bract length ($t=9.71$; $p=0.0001$)	3.3 ±0.4 mm ($n=172$)	3.8 ±0.5 mm ($n=218$)
Inner bract width ($t=-4.64$; $p=0.0001$)	1.2 ±0.2 mm ($n=172$)	1.1 ±0.2 mm ($n=218$)
Ray floret number ($t=3.24$; $p=0.0045$)	14 ±4 ($n=10$)	20 ±4 ($n=10$)
Ligule upper surface pubescence	glabrous	glabrous
Ligule lower surface pubescence	sparse to moderate	sparse to moderate
Ligule length ($t=8.73$; $p=0.0001$)	10.6 ±1.5 mm ($n=137$)	12.4 ±2.0 mm ($n=187$)
Ligule width ($t=0.663$; $p=0.5077$)	4.5 ±0.4 mm ($n=138$)	4.5 ±1.0 mm ($n=187$)
Disc corolla lobe pubescence	sparse to moderate	sparse to moderate
Disc corolla length ($t=10.78$; $p=0.0001$)	2.1 ±0.3 mm ($n=100$)	2.5 ±0.3 mm ($n=100$)
Disc corolla diameter ($t=4.89$; $p=0.0001$)	0.71 ±0.1 mm ($n=100$)	0.65 ±0.1 mm ($n=100$)
Disc corolla tube length ($t=4.13$; $p=0.0001$)	0.4 ±0.1 mm ($n=100$)	0.5 ±0.1 mm ($n=100$)
Achene shape	obconic to narrowly obconic	obconic to narrowly obconic
Achene pubescence	moderate to dense	moderate to dense
Achene surface	silver-white to brown	silver-white
Achene length ($t=11.87$; $p=0.0001$)	1.9 ±0.2 mm ($n=100$)	2.2 ±0.2 mm ($n=100$)
Achene diameter ($t=-1.33$; $p=0.184$)	0.7 ±0.1 mm ($n=100$)	0.7 ±0.1 mm ($n=100$)
Pappus scale number ($t=17.06$; $p=0.0001$)	5 ±1 per achene ($n=100$)	7 ±1 per achene ($n=100$)
Pappus scale shape	obovate	obovate
Pappus scale length ($t=-9.35$; $p=0.0001$)	1.6 ±0.3 mm ($n=100$)	1.3 ±0.1 ($n=100$)
Pappus scale width ($t=0.321$; $p=0.7486$)	0.7 ±0.1 mm ($n=100$)	0.7 ±0.1 mm ($n=100$)
Pappus awn length ($t=-33.48$; $p=0.0001$)	0.6 ±0.2 mm ($n=100$)	0 ±0 ($n=100$)
Soil preference	limestone-derived	sand

TABLE 2. Localities of specimens intermediate between *Tetraneuris linearifolia* var. *linearifolia* and *T. linearifolia* var. *arenicola*.

Bee Co.: below Skidmore on Sinton hwy, 3 Dec 1948, *Tharp et al. 48-99* (TEX).
Bee Co.: 1 mi S of Normanna, along Medio Creek, 28 Mar 1948, *Cory 54100* (LL).
Duval Co.: hwy 1329, 8.3 mi S of hwy 359 (jct in San Diego), 20 Mar 1991, *Bierner 91-10* (SWT, TEX). Chromosome number $n = 15$? Multivalents and lagging chromosomes noted.
Duval Co.: hwy 1329, 11.4 mi S of hwy 359 (jct in San Diego), 20 Mar 1991, *Bierner 91-11* (SWT, TEX). Chromosome number $2n = 15_{II}$. Lagging chromosome noted in one anaphase I cell.
Duval Co.: hwy 16, 5.1 mi N of hwy 44 (jct in Freer), 21 Mar 1991, *Bierner 91-16* (SWT, TEX).
Live Oak Co.: ca 4.5 mi N of Swinney Switch, 28 Mar 1963, *Correll 27036* (LL).
Live Oak Co.: 41 mi N of Alice, 1 Mar 1944, *Painter & Barkley 14463* (LL).
Live Oak Co.: hwy 59, 1.6 mi E of hwy 281, 24 Mar 1976, *Bierner 51518* (SWT, TEX).
Live Oak Co.: hwy 281, 2.8 mi S of hwy 59 (jct in George West), 19 Mar 1991, *Bierner 91-4* (SWT, TEX). Chromosome number $2n = 15_{II}$.
Live Oak Co.: hwy 281, 10.8 mi N of hwy 3162 (jct S of George West), 19 Mar 1991, *Bierner 91-5* (SWT, TEX).
Live Oak Co.: hwy 3162, 10.1 mi E of hwy 281, 19 Mar 1991, *Bierner 91-8* (SWT, TEX). Chromosome number $2n = 15_{II}$.
McMullen Co.: hwy 16, 3.6 mi N of hwy 624 (jct in south-central part of county), 21 Mar 1991, *Bierner 91-17* (SWT, TEX).

previous paragraph were examined for chromosome number and were found to have $2n = 15_{II}$. However, *Bierner 91-10* could not be counted due to the presence of multivalents and lagging chromosomes, and *Bierner 91-11* had one anaphase I cell with a lagging chromosome (Table 2).

Chemical studies of *Tetraneuris linearifolia* var. *arenicola* resulted in the isolation of five known helenanolides, two known germacranolides, a new guaianolide, ten new esterified glucopyranosides of 9-hydroxy-γ-geraniol, two new palmitates of lupeol derivatives, a mixture of glucopyranoside *p*-coumarates, and eight flavonoids including the new 6,8,3'-trimethoxy-5,7,4',5'-tetrahydroxyflavone; details of their isolation and identification are reported elsewhere (Díaz et al.1992). The chemistry of var. *arenicola* is very similar to that of var. *linearifolia* (Herz et al. 1970; Dominguez et al. 1980; Zdero et al. 1991). Three of the helenanolides, one of the germacranolides, two of the glucopyranoside *p*-coumarates, and one of the flavonoids isolated from var. *arenicola* have also been reported from var. *linearifolia* (Herz et al. 1970; Zdero et al. 1991). We isolated several compounds from var. *arenicola* that have not been reported from var. *linearifolia*, however, and several compounds reported from var. *linearifolia* (e.g., linearifolin B) were not isolated by us from var. *arenicola*. The ten new γ-geraniol glucopyranosides isolated from var. *arenicola* are similar to but not identical with a series of γ-geraniol glucopyranosides isolated from var. *linearifolia* (Zdero et al. 1991).

These taxa are here recognized as distinct because 1) they have separate geographic ranges, 2) they grow on different soils, and 3) they are morphologi-

cally distinct within their ranges. They are here treated as varieties of a single species because 1) they are morphologically very similar in many of their characters, and 2) there is a zone of intergradation in which the plants are difficult to identify as one variety or the other. The cytologic data (i.e., normal meiosis in plants that are morphologically distinct, but meiotic irregularities in some of the plants with intermediate morphology) and overall chemistry (i.e., the high degree of chemical similarity on the one hand along with differences [albeit minor] in sesquiterpene lactone and γ-geraniol glucopyranoside composition on the other) are consistent with the treatment of these taxa as conspecific but distinct at the varietal level.

TAXONOMY

Tetraneuris linearifolia (Hook.) E. Greene var. **arenicola** Bierner, var. nov.

Tetraneuris linearifoliae (Hook.) E. Greene var. *linearifoliae* similis sed foliis latioribus pubescentioribusque, foliis inferis saepe dentatis dentibus 2 – 6, caulibus pubescentioribus, et pappi squamis muticis differt.

Plants annual, 3.4 ±0.7 dm tall (range 2.2 – 4.8 dm; n = 12) excluding the root. Stems 1 to usually several (4 – 10), unbranched to sparingly branched to corymbosely branched above, sulcate below becoming striate above, densely pubescent throughout. Leaves moderately to, usually, densely pubescent, sparsely to moderately dotted with impressed glands and sometimes with sessile glands, midstem leaves 6.7 ±2.8 mm wide (range 2.5 – 16.0 mm; n = 36); basal leaves in a rosette, usually spatulate in outline, entire or, usually, with 2 to 6 lateral teeth or lobes, moderately to densely pubescent; lower leaves usually oblanceolate in outline, entire or, usually, with 2 lateral teeth or lobes or, occasionally, with 4 or 6 lateral teeth or lobes, moderately to, usually, densely pubescent; middle leaves usually oblanceolate in outline, entire or, often, with 2 lateral teeth or lobes, usually densely pubescent; upper leaves usually narrowly oblanceolate, usually entire but sometimes with 1 or 2 lateral teeth or lobes, usually densely pubescent. Peduncles 17.8 ±4.6 cm long (range 10 – 29 cm; n = 36), striate, expanded apically, moderately to densely pubescent below becoming very densely pubescent above, sparsely dotted with sessile glands. Heads 23 ±16 per plant (range 8 – 50; n = 12), hemispheric, 9.0 ±1.0 mm high (range 8 – 10 mm; n = 27), 13.4 ±1.2 mm in diameter (range 12 – 15 mm; n = 27) excluding the rays. Receptacles usually hemispheric to occasionally conic, naked, 3.1 ±0.6 mm high (range 2.0 – 4.6 mm; n = 26), 4.4 ±0.9 mm in diameter (range 3.0 – 6.0 mm; n = 26). Involucral bracts in two morphologically similar series; outer bracts usually 17 ±3 per head (range 13 – 21; n = 10), free, green and herbaceous, usually oblanceolate, apex obtuse to acute, outer surface and margins densely pubescent and eglandular to sparsely dotted with sessile glands, inner surface glabrous and eglandular, 4.4 ±0.5 mm long (range 3.0 – 5.5 mm; n = 165), 0.9 ±0.2 mm wide

(range 0.5 – 1.4 mm; *n*=165); inner bracts usually 22 ±4 per head (range 12 – 25; *n*=10), free, green and herbaceous with a hyaline margin, obovate, apex rounded to obtuse to acute, outer surface densely pubescent and eglandular to sparsely dotted with sessile glands, inner surface glabrous and eglandular, 3.8 ±0.5 mm long (range 2.7 – 4.8 mm; *n*=218), 1.1 ±0.2 mm wide (range 0.5 – 1.5 mm; *n*=218). Ray florets carpellate, fertile, usually 20 ±4 per head (range 14 – 25; *n*=10); ligules yellow, 3 – lobed, tube glabrous to sparsely or, occasionally, moderately pubescent, upper surface glabrous and eglandular, lower surface sparsely to moderately pubescent and sparsely to moderately dotted with sessile glands, 12.4 ±2.0 mm long (range 9.0 – 16.8 mm; *n*=187), 4.5 ±1.0 mm wide (range 2.8 – 7.1 mm; *n*=187). Disc florets hermaphroditic, fertile; corollas yellow with yellow lobes, 5-lobed, constricted the lower one-sixth to one-fourth into a yellow-brown tube, cylindric to cylindric campanulate, glabrous below, sparsely to moderately pubescent on the lobes, eglandular to sparsely dotted with sessile glands, 2.5 ±0.3 mm long (range 2.1 – 3.0 mm; *n*=100), 0.7 ±0.1 mm in diameter (range 0.5 – 1.0 mm; *n*=100), the tube 0.5 ±0.1 mm long (range 0.2 – 0.7 mm; *n*=100). Achenes obconic to narrowly obconic, surface silver-white, moderately to densely pubescent with straight, forked, antrorse hairs, moderately dotted with sessile and impressed glands, 2.2 ±0.2 mm long (range 1.9 – 2.6 mm; *n*=100), 0.7 ±0.1 mm in diameter (range 0.5 – 0.9 mm; *n*=100). Pappus scales usually 7 ±1 (range 5 – 8; *n*=100), obovate, apex rounded to obtuse, not awned, 1.3 ±0.1 mm long (range 1.0 – 1.7 mm; *n*=100), 0.7 ±0.1 mm wide (range 0.5 – 1.0 mm; *n*=100). Chromosome number: $2n = 15_{II}$.

Distributed in South Texas in the vicinity of Brooks, Hidalgo, Jim Hogg, and Zapata counties (Fig. 2), growing in sand at roadsides and in pastures. Flowering December to June, mainly in March and April.

TYPE: U.S.A. TEXAS. Brooks Co.: Hwy 3066, 14.3 mi W of hwy 281 (jct S of Falfurrias), infrequent at roadside in deep sand, some plants 30 cm or more in diameter, 20 Mar 1991, *Bierner 91-13* (HOLOTYPE: TEX; ISOTYPES: NY, US).

Additional specimens examined: TEXAS. **Brooks Co.:** Hwy 281, ca 10 mi S of Falfurrias, 21 Apr 1949, *Lundell 14913* (GH, LL); 9 mi N of Encino, 4 Jun 1945, *Lundell & Lundell 13789* (LL); Hwy 281, 10.7 mi S of hwy 285 (jct in Falfurrias), $2n = 15_{II}$, 15 Apr 1988, *Bierner 88-35* (SWT, TEX); Hwy 281, 10.9 mi S of hwy 285 (jct in Falfurrias), 22 Apr 1989, *Bierner 89-4* (SWT, TEX); Hwy 285, 5.2 mi E of hwy 1329 (jct ca 9 mi W of Falfurrias), $2n = 15_{II}$, 20 Mar 1991, *Bierner 91-12* (SWT, TEX). **Hidalgo Co.:** Hwy 490, 5.7 mi W of hwy 281, 20 Mar 1991, *Bierner 91-14* (SWT, TEX). **Jim Hogg Co.:** Hwy 285, 5 mi E of Hebbronville, *Fowler & Vergara 70* (TEX). **Zapata Co.:** 5.5 mi NE of San Ygnacio on rd to Aguilares, 16 Mar 1966, *Correll 32248* (LL); ca 4 mi NE of San Ygnacio, 13 Dec 1967, *Correll 35453* (LL).

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